

Construction Engineering & Inspection

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What is Construction Engineering and Inspection (CEI)?

It is the administration of the construction project (engineering and inspection)

– It ensures quality work by the contractor by:

- Making Timely inspections
- Issuing clear instructions
- Ensuring early sampling and testing of materials
- Promptly furnishing data needed by the Contractor
- Promptly resolving conflicts and being decisive
- Timely preparing payment estimates/change orders

How CEI is Determined

- Project on a non-state route
 - Entity inspects using in-house personnel
 - Entity hires a consultant with Entity funds
 - Consultant obtained through DOTD's consultant selection process (Entity pays match)

Handout: Suggested Contract Outline

Agenda

- This is an Overview
- Project Set-up
- Pre-construction conference
- Construction
- Project Closeout

Question

- When should a project set-up meeting be held?
- A. Before the project is bid
- B. Prior to the pre-construction meeting
- C. After the pre-construction meeting

Project Set-up

- *Purpose of this section:* To help the Local Public Agency Project Engineer (LPA P.E.) and the Responsible Charge understand the tasks required prior to holding the Pre-Construction Conference



Project Set-up

- A meeting is recommended to discuss and fulfill project set-up tasks
 - Who (Attendees) – Entity Responsible Charge, Local Public Agency Project Engineer (LPA P.E.), DOTD District Project Coordinator, DOTD District Lab Engineer
 - When – Between the Notice of Contract Execution and prior to the Pre-construction Conference (Max. of 30-days after the Entity Notice of Contract Execution)

Project Set-up

Pre-construction

Construction

Closeout

Set-up Meeting Agenda Topics

- Role and Responsibilities
 - Site Manager (& Set-up)
- Review of Legal Documents
 - QA/QC Materials Testing
 - Certified Lab
 - Pre-construction Conference Schedule & Checklist
 - Progress Schedule & Approval
 - Inspection Requirements
 - Inspectors, Work Zone
 - Final Audit Checklist
 - Partial Estimate & Change Orders
- CE&I Topics
 - Construction Engineering & Inspection Guidelines
 - Compliance Goals
 - Construction Contract Administration Manual
 - Sampling Plan

Handout: Set-Up Meeting Agenda Topics

Project Set-up

Pre-construction

Construction

Closeout

Roles & Responsibilities

- **LPA Project Engineer (LPA PE)** – A licensed engineer in the State of Louisiana assigned by the Entity to provide contract administration for construction engineering and inspection. *(See DOTD Project Coordinator Duties handout)*
 - In accordance with DOTD policies, this person is responsible for the administration of the contract in accordance with DOTD’s Contract Administration Manual.
 - Person may be an Entity (engineer) employee or a hired consultant by the Entity.
- **Responsible Charge** – A full time local government employee that is responsible for administering and accountable for the project. *(See DOTD Project Coordinator Duties handout)*

Project Set-up

Pre-construction

Construction

Closeout

Roles & Responsibilities

- **DOTD Project Coordinator** – An engineer from the DOTD office that provides oversight for the construction project and is a resource to the LPA Responsible Charge person and their Project Engineer.

Handout: DOTD Project Coordinator Duties



Legal Documents – Entity/State Agreement

- It is a written/signed agreement between the State and the Sponsoring Entity (an LPA) which identifies the responsibilities of each party and the funding provisions for the project. It must be executed before any reimbursable work can begin.

Project Set-up

Pre-construction

Construction

Closeout

Legal Documents – Construction Contract

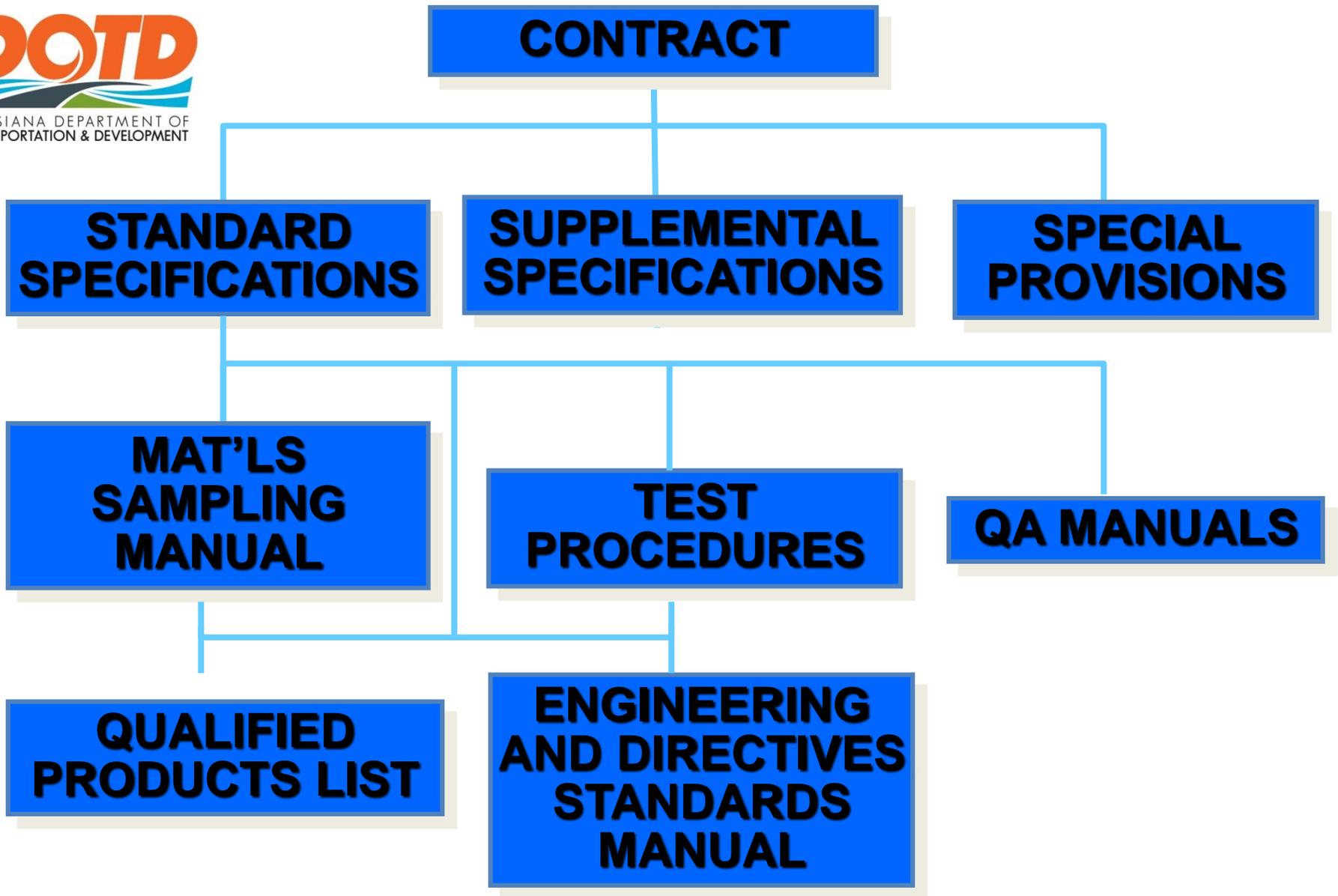
- It is the legally binding written agreement between the **Entity** and the **Contractor** setting forth obligations for the performance of work for a specific project. Specifies: What is required. How to pay for work

Project Set-up

Pre-construction

Construction

Closeout



Parts of the Contract

- **Specification Book (Blue Book)** - 2006 edition of the LOUISIANA STANDARD SPECIFICATIONS for ROADS and BRIDGES which is the compilation of provisions and requirements for the performance of prescribed work and the basis of payment for the work approved for general application and repetitive use
- **Supplemental Specifications:** Approved additions and revisions to the *Standard Specifications* made between publications

Project Set-up

Pre-construction

Construction

Closeout

Parts of the Contract

- **Special Provisions** - Approved additions and revisions to the *Standard Specifications* and supplemental specifications that initially apply only to an individual project or a small group of projects (special provisions that are found to have statewide application to other projects may be incorporated into the supplemental specifications and standard specifications)
- **Sampling Manual** - Establishes and standardizes material testing and acceptance requirements for DOTD

Project Set-up

Pre-construction

Construction

Closeout

Parts of the Contract (Order of Precedence)

- Special Provisions
- Plans
- Supplemental Specifications
- Standard Specifications
- Standard Plans

(Order found in Section 105.04 of
the Standard Specification
(Bluebook))

Project Set-up

Pre-construction

Construction

Closeout

Compliance Programs

- **Disadvantaged Business Enterprise (DBE) program** - Ensures equal opportunity in transportation contracting markets, addresses the effects of discrimination in transportation contracting, and promotes increased participation in Federally funded contracts by small, socially and economically disadvantaged businesses, including minority and women owned enterprises

Project Set-up

Pre-construction

Construction

Closeout

Compliance Programs

- **Small Business Element (SBE) program** - The Small Business Element (SBE) Program was created to remedy past and current discrimination against SBE firms. The intention is to level the playing field for economically disadvantaged individuals wanting to do business with the DOTD on U.S. Department of Transportation federally assisted projects.
- This program is race neutral

Project Set-up

Pre-construction

Construction

Closeout

Construction Contract Administration Manual

- This is the “How To” for inspection located under the Construction tab on the LA DOTD Web Page (www.dotd.la.gov) contains detailed instruction on contract administration, diaries, contractor payments, change orders, final estimates, etc.

Project Set-up

Pre-construction

Construction

Closeout

Site Manager

- DOTD's electronic system that is required to manage contract information through the entire construction cycle which includes:
 - Daily Work Reports (DWRs), Daily Diaries, Monthly Progress Payments, Change Orders
 - Project Engineer (LPA and/or Consultant) and inspectors must get set up in this system at the beginning of a construction project

Project Set-up

Pre-construction

Construction

Closeout

Inspection Requirements

- Will be on the job site during construction activities
 - Areas requiring certifications:
 1. Embankment and Base Course
 2. Asphaltic Concrete Paving
 3. Asphaltic Concrete Plant
 4. Structural Concrete
 5. Portland Cement Concrete Paving
 - Other qualifications include :
 1. sampling/testing
 2. Traffic Control (TCS & TCT)

Inspection Requirements

- A registered engineer is **NOT** the same as a certified inspector
- Certification training is available through LTRC

*Handout: Instructions on
How to Apply For DOTD
Technician Certification*

Project Set-up

Pre-construction

Construction

Closeout

Work Zone Requirements

- **Traffic Control Supervisor (TCS)** - Shall be provided by the contractor to patrol the project to assure that the traffic control devices are properly placed in accordance with the traffic control plans and standards. Record daily documentation in Site Manager regarding traffic control

Project Set-up

Pre-construction

Construction

Closeout

QA/QC

- The District Lab Engineer/District Project Coordinator will assist the LPA P.E. in developing a sampling plan (a list of all materials that have to be sampled and all tests that have to be taken on the job)

Handout: *EDSM III.5.1.2 Material Quality Assurance Documentation, MATT System & Form 2059*

Project Set-up

Pre-construction

Construction

Closeout

Pre-Construction Conference

- *Purpose of this section:* To help the Local Public Agency Project Engineer (LPA P.E.) and the Responsible Charge understand the purpose of the pre-construction conference

Project Set-up

Pre-construction

Construction

Closeout

Pre-Construction Conference

- A pre-construction conference establishes contract obligations and requirements of the contractor and identifies key personnel contact information.
 - Timing - After the contract has been awarded and the Entity Notice of Contract Execution (ENOCE) has been sent to the entity, the entity responsible charge and the LPA P.E. will schedule within 30 days. (The Notice to Proceed (NTP) must be set within 30-days of the ENOCE)
 - Agenda – Completion of the Pre-construction Checklist

Handout: Preconstruction Conference Checklist



Construction

- *Purpose of this section:* To help LPA Project Engineer and Responsible Charge understand their roles in inspection, testing, cost control, documentation and to successfully submit partial estimates and change orders



LPA P.E. Construction Tasks

- All documentation must follow that as shown in the Construction Contract Administration Manual.
[http://www.dotd.la.gov/construction/Contract Administration Manual May 2011.pdf](http://www.dotd.la.gov/construction/Contract_Administration_Manual_May_2011.pdf)
- All the items to be paid should be measured and documented in both field books/ spreadsheets and Site Manager.
- A detailed estimate in Site Manager must be prepared monthly whether work is performed or not (every 30 days).

Project Set-up

Pre-construction

Construction

Closeout

LPA PE Construction Tasks

- Responsible for obtaining all the necessary samples and performing tests in the field - must have a certified inspector to assist him
- All sampling and testing must be performed in accordance with the DOTD Materials Sampling Manual and/or Sampling Plan of the project
http://www.dotd.la.gov/highways/construction/lab/msm/2006_Specs/tableofcontents.shtml

Project Set-up

Pre-construction

Construction

Closeout

LPA PE Construction Tasks

- The project will have to be built in accordance with the contract which includes the DOTD Louisiana Standard Specifications for Roads and Bridges, Special Provisions, Supplemental Specifications and Plans
- All required DBE/SBE forms are completed in accordance with the DOTD Compliance Programs requirements as outlined in the DBE /SBE Contract Provisions (i.e. monthly DBE/SBE participation/ CP-1A Form)

Project Set-up

Pre-construction

Construction

Closeout

DOTD Project Coordinator Construction Tasks

- Make periodic inspections of the work (varies based on project scope and complexity)
- Document the inspection
 - Will not issue instructions to the contractor's superintendent, foreman or any of his personnel, nor direct work in any manner other than advising the Entity's project personnel that the contractor's work does not conform to plans and/or specs.
DOTD provides oversight for FHWA

Project Set-up

Pre-construction

Construction

Closeout

DOTD Project Coordinator Construction Tasks

- Review the first partial estimate in Site Manager after notification it is complete
- Advise the LPA Project Engineer or LPA inspector of any noted construction deficiencies & unacceptable methods of written records/field documentation
- Provide technical assistance and answer questions

Project Set-up

Pre-construction

Construction

Closeout

Construction Documentation

- **Project diaries/Daily Work Reports (DWRs) in Site Manager**

The diary entries shall be written and kept by the P.E./inspectors on a daily basis through the duration of the project and record the work done each day with quantities, equipment, and personnel on the project as well as weather conditions and whether a contract day was charged. DWRs begin on the NTP date. Entries should be accurate and thorough. (Diaries are important, especially if a claim or lawsuit arises (may be many years later))

Project Set-up

Pre-construction

Construction

Closeout

MOST IMPORTANT

- Failure to supply the required documentation as per DOTD policies will result in either a delay in reimbursement or possible withdrawal of federal funding should the matter not be resolved in a timely manner
- This is a requirement, not an option
- This will be covered throughout the day

Construction Documentation

- **Measurement of the Work** - The LPA P.E. and his inspectors are responsible for measuring on a daily basis:
 - Work that has been completed
 - Documentation of the items and quantities in a field book and/or spreadsheet and then into Site Manager for pay purposes

Project Set-up

Pre-construction

Construction

Closeout

Construction Payment

- **Partial Estimate** - Developed each month by the LPA P.E. in Site Manager regardless of work activity. Once the partial estimate has been approved by DOTD, the entity will be issued a check to reimburse them for the percentage specified in the Entity/State Agreement for the partial estimate amount
- **Payment** - The sponsoring entity is responsible by law for paying the contractor correctly and on time (within 30 days) for work performed on a monthly basis

Project Set-up

Pre-construction

Construction

Closeout

Construction Documentation

- **Change Orders** - Any changes to the plans or specifications will require a change order. The LPA P.E. is responsible for writing all change orders and submitting them for approval.
 - Every change order should have all headings addressed
 - Project Description
 - Justification
 - Items
 - Cost
 - Specifications
 - Attachments
 - Funding

Project Set-up

Pre-construction

Construction

Closeout

Construction Documentation

Change Orders:

- The Entity is listed as the Contractor, the DOTD is the owner, and the contractor is not represented in Site Manager
- The contractor's concurrence with the change order is denoted by the contractor's signature on a printed draft copy scanned as an attachment to the change order using Content Manager
- Authorization or Approval is set up for each Change Order separately in Site Manager and will always include a DOTD representative

Project Set-up

Pre-construction

Construction

Closeout

Construction Documentation

- **Form 2059 Report** - Completed sampling plan showing all testing and sampling that has been taken and resolution for any failing tests. Form 2059 Report is submitted by the LPA P.E. to the DOTD District Lab Engineer for acceptance (approved by District Lab)



Construction Documentation

- **Final Estimate Package** – Submitted by the LPA P.E. within 30 days of the final acceptance and includes:
 - Form 2059 report
 - Completed final estimate
 - “As-built” drawings signed by LPA P.E.
 - Field books

Project Set-up

Pre-construction

Construction

Closeout

DOTD Project Coordinator Construction Tasks

- Verify conformity with first estimate involving DBE work (reviewing the Form CP-1A if applicable) as outlined in the DBE /SBE Contract Provisions
- Review payrolls with the LPA Project Engineer for conformity with the first estimate
- Attend any meeting requested by the LPA Responsible Charge or LPA Project Engineer

Responsible Charge Construction Tasks

- *You should know about the project scope, schedule/status and budget*
- *You do not have to be in the field everyday if you have a CE&I consultant*
- *BUT.....You need to be able to answer project status questions if called by DOTD*

Project Set-up

Pre-construction

Construction

Closeout

Claims

- DOTD has an established claims procedure (EDSM III.1.1.28) (*see handout*) that involves an independent evaluation of the claim at the DOTD HQ Construction Section level
 - If a contractor's Claim is not resolved at the LPA project engineer's level or the DOTD Project Coordinator's level, the unresolved claim can be forwarded to DOTD HQ Construction Section who will provide an ***opinion of how DOTD would handle the claim*** to the LPA for them to resolve

MOST IMPORTANT

- Failure to supply the required documentation will result in either a delay in reimbursement or possible withdrawal of federal funding should the matter not be resolved in a timely manner
- This is a requirement, not an option

Project Closeout

- *Purpose of this section:* To help the Local Public Agency Project Engineer (LPA P.E.) and the Responsible Charge understand the documentation requirements to successfully closeout a project



Project Closeout Tasks

- **Final Inspection** - The responsible charge/LPA P.E. shall set up a final inspection and acceptance meeting for the project when it is complete which includes the contractor, the Responsible Charge and DOTD
- **Final Acceptance** - The Entity must pass a resolution accepting the project before the DOTD can accept the project

Project Set-up

Pre-construction

Construction

Closeout

LPA P.E. Closeout Tasks

- Notify DOTD of project completion
 - Schedule final inspection
- Prepare the final estimate package and hand-deliver with all backup documentation to the DOTD Project Coordinator for review

Handout: Closeout Checklist



DOTD Project Coordinator Closeout Tasks

- Attend the final inspection
- Provide guidance to the LPA Project Engineer to prepare the final estimate package
- Review the final estimate package with backup documentation

Project Set-up

Pre-construction

Construction

Closeout

QUESTIONS

